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Back-to-School Shots a Proven Investment

**By Melanie Reynolds
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At Lewis and Clark Public Health, August is known as “back-to-school immunization month.” Our reception area fills with children waiting to get the shots they need to attend public school in Montana.

This year there’s a new requirement: Under a law passed by the 2015 Legislature, all kids entering school must show proof of two varicella, or chickenpox, vaccinations. In the past, the varicella vaccine was recommended for children 1 and older but not required for school attendance.

The new law also requires seventh graders to get another Tdap booster to protect against tetanus, diphtheria, and pertussis, or whooping cough. The latter disease has swept through some of our schools in recent years.

Before the middle of the 20th century, infectious diseases like smallpox, polio, measles, and diphtheria struck hundreds of thousands of U.S. residents and killed thousands each year.

Today, these diseases are almost unheard of. Only one case of diphtheria has been reported since 2004, according to the Centers for Disease Control and Prevention (CDC). Most doctors practicing today have never seen a case of measles.

Why Keep Immunizing?

So why, you may wonder, do our children still need so many immunizations? Why do we keep vaccinating against diseases we almost never see?

The answer has two parts: First, vaccinations aren’t just for protecting ourselves. They also protect those around us who may not be able to get vaccinated or who may be susceptible to disease for other reasons. If a critical number of people in a community are vaccinated against a particular illness, the whole community is protected. It’s called “herd immunity.”

Second, vaccinations don't just protect us today. They protect our children's children, and their children, by keeping diseases we've almost defeated from making a devastating comeback. The recent outbreak of measles originating in Disneyland demonstrated how swiftly that can happen.

Smallpox Success Story

One of the greatest public health stories of all time involves the smallpox vaccine. If you're my age or older, you probably remember a nurse scratching the vaccine into your skin, and you may still have a round scar on your upper arm to show for it.

Smallpox used to be one of the most devastating illnesses in the world, killing more than 300 million people during the 20th century alone. In 1967, the World Health Organization (WHO) began a concerted vaccination campaign to eradicate it. A decade later, it succeeded. Scientists declared that smallpox no longer exists (except for samples confined to laboratories for research purposes).

Smallpox remains the only disease we've succeeded in eradicating from the earth. The last case in the United States was reported in 1949. That's why we no longer vaccinate against it.

Eradicate v. Eliminate

In the hierarchy of disease control, eradication is the ideal goal. "Eradication" means there are no more infections with the disease and no more possibility of transmitting it anywhere in the world.

Short of that is "elimination," which means stopping transmission of a disease in a specific geographic area but not worldwide. An eliminated disease could still be reintroduced, especially given our love of global travel.

Some diseases eliminated in the United States include:

- **Polio.** The first vaccine was licensed in 1955, the last case in the U.S. occurred in 1979, and as of 1991 the disease has been eliminated from the Western Hemisphere. Health authorities hope to eradicate it by promoting vaccination in developing countries.
- **Measles.** After the vaccine was licensed in 1963, the nation saw a 99-percent reduction in cases of the disease. Outbreaks still occur sometimes when the disease is brought from other countries or when vaccination rates drop in specific locations.
- **Hib.** Before the first vaccine was licensed in 1985, about 20,000 cases of Hib (short for *Haemophilus influenzae* type B bacteria) occurred each year. It was the leading cause of childhood bacterial meningitis and postnatal mental retardation. Vaccines have nearly eliminated it among kids today. WHO estimates that each year it causes 2 to 3 million cases of serious illness in the rest of the world and 450,000 deaths of young children.
- **Rubella.** Sometimes called German measles, rubella was declared eliminated from the U.S. in 2005 and from all of North and South America just this spring. It's targeted through the pair of MMR vaccinations that children get in their first 5-6 years.

Risk of Re-Emergence

The success of vaccines is indisputable. They're responsible in large part for the increase in the average life expectancy of Americans from 47 years in 1900 to about 78 today. Vaccines have been credited with saving tens of billions of dollars worldwide.

Immunization is one of the most efficient tools for promoting public and individual health.

That's why it's so important to keep our immunization rates high. A recent drop in rates has led to the re-emergence of measles and pertussis in this country. Other deadly diseases lurk only a plane ride away.

To achieve the full potential of vaccines, parents must recognize them as a way to mobilize the body's natural defenses. They must seek them for their children. That's the only way we'll keep these diseases from once again becoming terrifying household names.